

General Offices/3M

3M Center
St. Paul, Minnesota 55144-1000
612/733 1110

CONTAINS NO CBI

90-890000468

3M

July 5, 1989

Certified Mail

Document Processing Center
Office of Toxic Substances, TS-790
U.S. EPA
401 M St., S.W.
Washington, D.C. 20460

Attn: CAIR Reporting Office

Dear Sir/Madam:

Attached is a completed CAIR Reporting form for 2,4,2,6
Toluene Diisocyanate, CAS No. 26471-62-5 for the 3M
facility in Decatur, Alabama.

I would like to comment on one item. The Employer I.D.
No. provided in questions 1.09 and 1.10 is the 9-digit
IRS number used by the 3M Company. Since only 8 blocks
are provided, the first digit is entered before the
first block. This number was used on the advice of the
CAIR "hotline".

We are not claiming any CBI in this report.

Sincerely,

Georjean L. Adams

Georjean L. Adams
Manager Regulatory Affairs
Bldg. 225-4N-16
Tele: 612/737-4795

GLA:dm
Attachment

PM 2:02



Form Approved
OMB No. 2010-0019
Approval Expires 12-31-89

90-890000 468

EPA-OTS



000622705M

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Comprehensive Assessment Information Rule

REPORTING FORM

89 JUN 11 PM 2:02
OTS OPERATIONS
OFFICE

When completed, send this form to:

Document Processing Center
Office of Toxic Substances, TS-790
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: _____

Document
Control Number: _____

Docket Number: _____

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been

CBI completed in response to the Federal Register Notice of..... [1][2] [2][2] [8][8]
mo. day year

☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. [0][2][6][4][7][1]-[6][2]-[5]

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule Not Applicable

(ii) Name of mixture as listed in the rule Not Applicable

(iii) Trade name as listed in the rule Not Applicable

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule Not Applicable

CAS No. of chemical substance [][][][][][]-[][]-[][]

Name of chemical substance Not Applicable

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer 1

☐ Importer 2

Processor 3

X/P manufacturer reporting for customer who is a processor 4

X/P processor reporting for customer who is a processor 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI

Yes ☒ Go to question 1.04

☐ No ☐ Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI

Yes 1

☐ No 2

b. Check the appropriate box below:

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) Not Applicable

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI

Trade name Not Applicable

☐ Is the trade name product a mixture? Circle the appropriate response.

Yes 1

No 2

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI

☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

Georjean L. Adams

NAME

Manager

TITLE

Georjean L. Adams

SIGNATURE

(612) 737 - 4795

TELEPHONE NO.

6/30/89

DATE SIGNED

☐ Mark (X) this box if you attach a continuation sheet.

1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

CBI

☐

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

Not Applicable

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____) _____ TELEPHONE NO.	_____ DATE OF PREVIOUS SUBMISSION

1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI

☐ "My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

Not Applicable

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____) _____ TELEPHONE NO.	

☐ Mark (X) this box if you attach a continuation sheet.

1.09 Facility Identification

Dun & Bradstreet Number[0][0]-[4][0][2]-[3][1][6][4]

EPA ID Number[0][0][4][0][2][3][1][6][4]

Employer ID Number⁴[1][0][4][1][7][7][7][5]

Primary Standard Industrial Classification (SIC) Code[2][8][9][9]

Other SIC Code[2][8][2][2]

Other SIC Code[][][][]

Dun & Bradstreet Number[0][0]-[6][1][7]-[3][0][8][2]
Employer ID Number⁴[1][0][4][1][7][7][7][5]

6

1.11 Parent Company Identification

CBI Name [M][i][n][n][e][s][o][t][a][][M][i][n][i][n][g][][&][M][f][g][.][][C][o]

[] Address [] I 9 4 [] E a s t [] a n d [] M c K i n g h t [] R d []
Street

City

[M][N] [5][5][1][4][4]--[1][0][0][0]
State Zip

Dun & Bradstreet Number [0][0]-[6][1][7]-[3][0][8][2]

1.12 Technical Contact

CBI Name [] [] [] [] [] [] [] [] [] [] G e o r g e a n L A d a m s

[] Title [M] [a] [n] [a] [g] [e] [r] [] [] [] [] [] [] [] [] [] [] [] [] [] [] []

Address [3][M][_][C][e][n][t][e]r[_][2][2][5][_][3][N][-09][_][_][_][_][_]
Street

[illegible]

[M] [N]
State

[5] [5] [1] [4] [4] -- [1] [0] [0] [0]
Zip

Telephone Number[6][1][2]-[7][3][7]-[4][7][9][5]

1.13 This reporting year is from to
Mo. Year Mo. Year

☐ Mark (X) this box if you attach a continuation sheet.

1.14 Facility Acquired -- If you purchased this facility during the reporting year, provide the following information about the seller:

Not Applicable

☐ CBI Name of Seller

☐ Mailing Address
Street

City

--
State Zip

Employer ID Number

Date of Sale
Mo. Day Year

Contact Person

Telephone Number--

1.15 Facility Sold -- If you sold this facility during the reporting year, provide the following information about the buyer:

Not Applicable

☐ CBI Name of Buyer

☐ Mailing Address
Street

City

--
State Zip

Employer ID Number

Date of Purchase
Mo. Day Year

Contact Person

Telephone Number--

☐ Mark (X) this box if you attach a continuation sheet.

1.16 For each classification listed below, state the quantity of the listed substance that was manufactured, imported, or processed at your facility during the reporting year.

CBI
☐

<u>Classification</u>	<u>Quantity (kg/yr)</u>
Manufactured	<u>Not Applicable</u>
Imported	<u>Not Applicable</u>
Processed (include quantity repackaged)	<u>93,000</u>
Of that quantity manufactured or imported, report that quantity:	
In storage at the beginning of the reporting year	<u>Not Applicable</u>
For on-site use or processing	<u>Not Applicable</u>
For direct commercial distribution (including export)	<u>Not Applicable</u>
In storage at the end of the reporting year	<u>Not Applicable</u>
Of that quantity processed, report that quantity:	
In storage at the beginning of the reporting year	<u>14,050</u>
Processed as a reactant (chemical producer)	<u>32,900</u>
Processed as a formulation component (mixture producer)	<u>60,100</u>
Processed as an article component (article producer)	<u>Not Applicable</u>
Repackaged (including export)	<u>Not Applicable</u>
In storage at the end of the reporting year	<u>19,350</u>

☐ Mark (X) this box if you attach a continuation sheet.

1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

[]

Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
Not Applicable		
Total		100%

☐ Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

☐ Year ending ☐ 1 2 ☐ 8 7
Mo. Year

Quantity manufactured Not Applicable kg

Quantity imported Not Applicable kg

Quantity processed 116,147 kg

Year ending ☐ 1 2 ☐ 8 6
Mo. Year

Quantity manufactured Not Applicable kg

Quantity imported Not Applicable kg

Quantity processed 83,948 kg

Year ending ☐ 1 2 ☐ 8 5
Mo. Year

Quantity manufactured Not Applicable kg

Quantity imported Not Applicable kg

Quantity processed 85,263 kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

☐ Not Applicable

☐ Continuous process 1

Semicontinuous process 2

Batch process 3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

- ☐ Continuous process 1
- ☐ Semicontinuous process 2
- ☐ Batch process ③

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

- ☐ Manufacturing capacity Not Applicable kg/yr
- ☐ Processing capacity Not Applicable kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

<input type="checkbox"/>	<u>Manufacturing Quantity (kg)</u>	<u>Importing Quantity (kg)</u>	<u>Processing Quantity (kg)</u>
Amount of increase	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
Amount of decrease	<u>Not Applicable</u>	<u>Not Applicable</u>	<u>Not Applicable</u>

☐ Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

	<u>Days/Year</u>	<u>Average Hours/Day</u>
Process Type #1 (The process type involving the largest quantity of the listed substance.)		
Manufactured	<u>N/A</u>	<u>N/A</u>
Processed	<u>26.8</u>	<u>24</u>
Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)		
Manufactured	<u>N/A</u>	<u>N/A</u>
Processed	<u>N/A</u>	<u>N/A</u>
Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)		
Manufactured	<u>N/A</u>	<u>N/A</u>
Processed	<u>N/A</u>	<u>N/A</u>

~~2.10~~ State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory kg
Average monthly inventory kg

☐ Mark (X) this box if you attach a continuation sheet.

2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity¹</u>	<u>Concentration (%) (specify \pm % precision)</u>	<u>Source of By-products, Coproducts, or Impurities</u>
N/A	N/A	N/A	N/A	N/A

¹Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct
C = Coproduct
I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to ☐ the instructions for further explanation and an example.)

a.	b.	c.	d.
Product Types ¹	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users ²
B	100%	35.3	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types ¹	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users ²
B	100%	35.3	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type ¹	Final Product's Physical Form ²	Average % Composition of Listed Substance in Final Product	Type of End-Users ³
B	B	45	I

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

³Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the
CBI listed substance to off-site customers.

☐ Truck ①
Railcar 2
Barge, Vessel 3
Pipeline 4
Plane 5
Other (specify) 390 Gallon Portable Tanks ⑥

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers
CBI or prepared by your customers during the reporting year for use under each category
of end use listed (i-iv).

☐ Category of End Use

i. Industrial Products

Chemical or mixture	<u>Unknown</u>	kg/yr
Article	<u>60,100</u>	kg/yr

ii. Commercial Products

Chemical or mixture	<u>N/A</u>	kg/yr
Article	<u>N/A</u>	kg/yr

iii. Consumer Products

Chemical or mixture	<u>N/A</u>	kg/yr
Article	<u>N/A</u>	kg/yr

iv. Other

Distribution (excluding export)	<u>N/A</u>	kg/yr
Export	<u>N/A</u>	kg/yr
Quantity of substance consumed as reactant	<u>N/A</u>	kg/yr
Unknown customer uses	<u>N/A</u>	kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

PART A GENERAL DATA

- 3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.
CBI The average price is the market value of the product that was traded for the listed substance.

☐

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.	N/A	N/A
The listed substance was transferred from a different company site.	N/A	N/A
The listed substance was purchased directly from a manufacturer or importer.	93,000	2.11
The listed substance was purchased from a distributor or repackager.	N/A	N/A
The listed substance was purchased from a mixture producer.	N/A	N/A

- 3.02 Circle all applicable modes of transportation used to deliver the listed substance to your facility.

☐

- Truck ①
Railcar 2
Barge, Vessel 3
Pipeline 4
Plane 5
Other (specify) _____ 6

☐ Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your
CBI facility.

☐ Bags 1
Boxes 2
Free standing tank cylinders 3
Tank rail cars 4
Hopper cars 5
Tank trucks ⑥
Hopper trucks 7
Drums 8
Pipeline 9
Other (specify) _____ .10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders N/A mmHg
Tank rail cars N/A mmHg
Tank trucks 760 mmHg

☐ Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

☐ **CBI**

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify ± % precision)</u>	<u>Amount Processed (kg/yr)</u>
N/A	N/A	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

PART C RAW MATERIAL VOLUME

3.05 State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify \pm % precision)
Class I chemical	93,000	99.5 \pm 0.5
Class II chemical	N/A	N/A
Polymer	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

PART A PHYSICAL/CHEMICAL DATA SUMMARY

- 4.01 Specify the percent purity for the three major¹ technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI
☐

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>99.5 ± 0.5</u> % purity
Technical grade #2	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity
Technical grade #3	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity

¹Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes (1)

No 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company (1)

Another source (2)

☒ Mark (X) this box if you attach a continuation sheet.



MATERIAL SAFETY DATA

OCEAN² Network
EMERGENCY PHONE 1-800-OLIN-911

SECTION I - IDENTIFICATION

MSDS FILE 563

CHEMICAL NAME & SYNONYMS Toluene Diisocyanate 80-20		
CHEMICAL FAMILY Isocyanate	FORMULA $C_9H_6N_2O_2$	PRODUCT TDI 80-20
DESCRIPTION Clear colorless to pale yellow liquid with sharp pungent odor		CAS NO. 26471-62-5

SECTION II - NORMAL HANDLING PROCEDURES

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Do not take internally. Do not get in eyes, on skin or clothing. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor. Protect against physical damage. Store in a cool, dry, well-ventilated place, away from areas where a fire hazard may be acute. Outside or detached storage is preferred. Blanket storage tanks with inert gas (nitrogen) or dry air. Separate from oxidizing materials.

PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
EYES Goggles GLOVES Rubber, NBR or PVA OTHER Coveralls, impervious footwear	As required to keep airborne concentrations below TLV

SECTION III - HAZARDOUS INGREDIENTS

BASIC MATERIAL	OSHA PEL	LD50	LC50	SIGNIFICANT EFFECTS
Toluene-2,4-diisocyanate	0.02 ppm ceiling	5.8 g/kg (rat)	10 ppm/4 hrs (mouse)	Skin, eye, mucous membrane irritation. Pulmonary irritant. Allergic sensitization to skin and respiratory tract. May cause asthma attacks.
Toluene-2,6-diisocyanate	None established	No data	11 ppm/4 hrs-mouse	Irritation

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT 270°F COC METHOD	OSHA CLASSIFICATION Not Regulated (Ignitable)	FLAMMABLE EXPLOSIVE LIMIT	LOWER 0.8%	UPPER 9.5%
EXTINGUISHING MEDIA water, carbon dioxide or dry chemical. Use water to keep the exposed containers cool.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Water spray should be used to cool fire exposed containers and/or to disperse unignited vapors. Use NIOSH/MSHA approved positive pressure self-contained breathing apparatus when any material is involved in a fire.				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 0.005 ppm TWA, 0.02 ppm STEL - 2,4 TDI (ACGIH 1986-87)	
SYMPTOMS OF OVER EXPOSURE May cause irritation to eyes, throat, lungs, stomach, skin. Allergic sensitization to skin and respiratory tract. May cause asthma attacks	
EMERGENCY FIRST-AID PROCEDURES	
SKIN Immediately flush thoroughly with water for 15 minutes, call a physician.	
EYES Immediately flush thoroughly with water for 15 minutes, call a physician.	
INGESTION Immediately drink water to dilute.	

SECTION VI - TOXICOLOGY (PRODUCT)

ACUTE ORAL LD 50
5.8 g/kg (rats)
ACUTE DERMAL LD 50
> 2 g/kg (rabbits)
ACUTE INHALATION LC 50
10 ppm/4 hrs (mouse)

CARCINOGENICITY Oral Exposure-Positive NTP Bioassay
MUTAGENICITY Not known to be mutagenic
EYE IRRITATION Irritation and/or burns
PRIMARY SKIN IRRITATION
Irritation and/or burns

PRINCIPAL ROUTES OF ABSORPTION
Inhalation, dermal

EFFECTS OF ACUTE EXPOSURE May cause irritation to lungs, eyes, throat, stomach, skin. Allergic sensitization of skin and respiratory tract. Corneal injury may occur.

EFFECTS OF CHRONIC EXPOSURE Damage/allergic sensitization to lungs. Inhalation studies indicate not carcinogenic. Carcinogenic risk from industrial use is not significant.

SECTION VII - SPILL AND LEAKAGE PROCEDURES (CONTROL PROCEDURES)

ACTION FOR MATERIAL RELEASE OR SPILL

Wear NIOSH/MSHA approved positive pressure supplied air respirator. Follow OSHA regulations for respirator use (see 29 CFR 1910.134). Wear goggles, coveralls and impervious gloves and boots. Add dry non-combustible absorbent, sweep up material and place in an approved DOT container. Add an equal amount of neutralizing solution to the container (90-95% water, 5-10% ammonia). Clean remaining surfaces with neutralizing solution and add this to container. Isolate container in a well-ventilated place and do not seal for 24 hrs. Ammonia vapors may be generated until solution is neutralized. Wash all contaminated clothing before reuse. In the event of a large spill use the telephone number shown on the front of this sheet.

TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300

WASTE DISPOSAL METHOD

Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate Federal, State and local regulatory agencies to ascertain proper disposal procedures.

SECTION VIII - SHIPPING DATA

D.O.T. Toluene diisocyanate Poison B UN 2078

SECTION IX - REACTIVITY DATA

STABLE ☒ UNSTABLE ☐ AT ☐ C ☐ F

HAZARDOUS

POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

CONDITIONS TO AVOID

Water or incompatible materials in a closed system, excess heat

INCOMPATIBILITY(MATERIAL TO AVOID)

Acids, bases and alcohols, surface active materials

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, nitrogen oxides, hydrogen cyanide

SECTION X - PHYSICAL DATA

MELTING POINT 53-56°F	VAPOR PRESSURE 0.1mmHg, 20°C	VOLATILES No data
BOILING POINT 484°F	SOLUBILITY IN WATER Insoluble	EVAPORATION RATE No data
SPECIFIC GRAVITY(H2O=1) 1.22	PH No data	VAPOR DENSITY(AIR=1) 6.0

INFORMATION: FURNISHED TO

FURNISHED BY DATE JUNE 19, 1987

Department of Environmental Hygiene and Toxicology
(203) 788-5436

Olin CORPORATION

120 Long Ridge Road, Stamford, Connecticut 06904

OCEAN® Network

EMERGENCY PHONE 1-800-OLIN-911

3M MATERIAL SAFETY DATA SHEET

PAGE 1 OF 2.

PRODUCT CODE: RD-1160 RD-1314 RD-2743 RD-2803 MC-636

91.0114

MATERIAL DESIGNATION:

ISSUE DATE: 5/16/1989 SUPERSEDES: 09-09-87
URETHANE POLYMER SOLUTION

3M I.D. NUMBER:

41-4100-1160-9: 41-4100-1314-2:
41-4100-2743-1: 41-4100-2803-3:
41-3900-0636-3

NFPA DIAMOND CODE:

HEALTH: ND FIRE: 2 REACTIVITY: 1 OTHER: W

FOR 24-HOUR EMERGENCY INFORMATION ON HEALTH EFFECTS CALL: (612)733-2882

1. INGREDIENTS

CAS NUMBER %

TLV(R) (UNIT)

URETHANE PREPOLYMER. ISOCYANATE
TERMINATED.

=== 55

NONE ESTABLISHED

TOLUENE-2,4-DIISOCYANATE+
(FREE TDI)

26471-62-5 45

0.005PPM TWA
0.02 PPM STEL*

*3M EXPOSURE GUIDELINE

+SUBJECT TO SECTION 313 SARA TITLE III

2. PHYSICAL DATA

BOILING POINT: >480F

VAPOR PRESSURE: ND

VAPOR DENSITY(AIR=1): >1

EVAPORATION RATE: ND

SOLUBILITY IN WATER: REACTS*

SPECIFIC GRAVITY(H2O=1): 1.16-1.20

PERCENT VOLATILE: <1%

VISCOSITY: 400-1000 CPS

PH: NA

APPEARANCE AND ODOR: CLEAR SYRUPY LIQUID. *REACTS WITH H2O TO FORM
INSOL. SOLIDS

3. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT(TEST METHOD): 155 F (PENSKEY-MARTENS.CC) FLA.LMT. LEL:ND UEL:ND

EXTINGUISHING MEDIA: CO2. DRY CHEMICAL. FOAM. WATER FOG.

SPECIAL FIRE FIGHTING PROCEDURES: NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS: PRODUCES HYDROGEN CYANIDE AND CARBON
MONOXIDE IF BURNED.

4. PRECAUTIONARY INFORMATION

AVOID EYE AND SKIN CONTACT. WEAR EYE PROTECTION AND RUBBER GLOVES. AVOID
INHALATION OF VAPOR. USE LOCAL EXHAUST VENTILATION ON OPEN CONTAINERS AND
TRANSFER POINTS FOR CONTROL OF VAPORS. IN CASE OF SPILL OR RELEASE OF VAPOR,
A SUPPLIED AIR RESPIRATOR SHOULD BE USED.

4.02

PRODUCT CODE: RD-1160 RD-1314 RD-2743 RD-2803 MC-636

PAGE 2 OF 2.

5. HEALTH HAZARD DATA

EYE CONTACT: MAY CAUSE EYE IRRITATION ON CONTACT OR ON EXPOSURE TO VAPORS.
SKIN CONTACT: MAY CAUSE SKIN IRRITATION ON CONTACT.
INHALATION: VAPORS MAY BE IRRITATING. MAY CAUSE RESPIRATORY ASTHMATIC-LIKE REACTION IN SUSCEPTIBLE INDIVIDUALS.
INGESTION: ACUTE TOXICITY BY INGESTION IS EXPECTED TO BE LOW. TOLUENE DIISOCYANATE HAS CAUSED CANCER IN LAB ANIMALS WHEN INCLUDED IN THEIR DIET (NTP).

SUGGESTED FIRST AID

EYE CONTACT: FLUSH EYES WITH LARGE AMOUNTS OF WATER FOR AT LEAST TEN MINUTES AND CALL A PHYSICIAN.
SKIN CONTACT: WASH AFFECTED AREA WITH SOAP AND WATER.
INHALATION: IF RESPIRATORY SYMPTOMS OCCUR (IRRITATION, DIFFICULT BREATHING) PROVIDE NON-CONTAMINATED AIR AND GET MEDICAL ATTENTION.
INGESTION: =====

6. ENVIRONMENTAL INFORMATION

SPILL RESPONSE: OBSERVE PRECAUTIONARY INFORMATION FROM OTHER SECTIONS. EXTINGUISH IGNITION SOURCES AND UTILIZE PROTECTIVE CLOTHING. COVER THE SPILL WITH AN ABSORBENT MATERIAL. SWEEP UP. CLEAN RESIDUES WITH METHYL ETHYL KETONE (MEK) OR AN EQUIVALENT SOLVENT. PLACE ALL CLEANUP MATERIAL INTO METAL DRUM.
RECOMMENDED DISPOSAL: DISPOSE BY CHEMICAL INCINERATION.
ENVIRONMENTAL DATA: THIS PRODUCT IS NOT A HAZARDOUS WASTE AS DESIGNATED BY US EPA STANDARDS (40 CFR PART 261).

7. REACTIVITY DATA

STABILITY: STABLE (CONDITIONS TO AVOID):
PROTECT FROM MOISTURE.
INCOMPATIBILITY: YES (MATERIALS TO AVOID):
WILL REACT WITH MOISTURE TO FORM SOLIDS.
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR (CONDITIONS TO AVOID):
NA
HAZARDOUS DECOMPOSITION PRODUCTS: WHEN BURNED TOXIC GASES SUCH AS
HYDROGEN CYANIDE AND CARBON MONOXIDE
MAY BE GIVEN OFF.

INFORMATION ON THIS DATA SHEET REPRESENTS OUR CURRENT DATA AND BEST JUDGEMENT AS TO THE PROPER USE IN HANDLING OF THIS PRODUCT UNDER NORMAL CONDITIONS.

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes 1

No 2

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

[]

Activity		Physical State				
		Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	N/A	1	2	3	4	5
Import	N/A	1	2	3	4	5
Process		1	2	3	4	5
Store		1	2	3	4	5
Dispose		1	2	3	4	5
Transport		1	2	3	4	5

[] Mark (X) this box if you attach a continuation sheet.

4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles ≥ 10 microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

☐

This question is N/A.

<u>Physical State</u>		<u>Manufacture</u>	<u>Import</u>	<u>Process</u>	<u>Store</u>	<u>Dispose</u>	<u>Transport</u>
Dust	<1 micron	_____	_____	_____	_____	_____	_____
	1 to <5 microns	_____	_____	_____	_____	_____	_____
	5 to <10 microns	_____	_____	_____	_____	_____	_____
Powder	<1 micron	_____	_____	_____	_____	_____	_____
	1 to <5 microns	_____	_____	_____	_____	_____	_____
	5 to <10 microns	_____	_____	_____	_____	_____	_____
Fiber	<1 micron	_____	_____	_____	_____	_____	_____
	1 to <5 microns	_____	_____	_____	_____	_____	_____
	5 to <10 microns	_____	_____	_____	_____	_____	_____
Aerosol	<1 micron	_____	_____	_____	_____	_____	_____
	1 to <5 microns	_____	_____	_____	_____	_____	_____
	5 to <10 microns	_____	_____	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 5 ENVIRONMENTAL FATE

PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) 871 (1/M cm) at 284 nm
 Reaction quantum yield, ϕ UK at _____ nm
 Direct photolysis rate constant, k_p , at ... < 1.2×10^{-3} 1/hr when NO_2 photolysis rate is 0.37/hr⁽²⁾

b. Oxidation constants at 25°C:

For $^1\text{O}_2$ (singlet oxygen), k_{ox} UK 1/M hr
 For RO_2 (peroxy radical), k_{ox} UK 1/M hr

c. Five-day biochemical oxygen demand, BOD_5 ... Not applicable due to reaction with water mg/l

d. Biotransformation rate constant:

For bacterial transformation in water, k_b ... No oxygen consumed 1/hr
 Specify culture in modified MITI test ⁽³⁾

e. Hydrolysis rate constants:

For base-promoted process, k_B UK 1/M hr
 For acid-promoted process, k_A UK 1/M hr
 For neutral process, k_N UK 1/hr

f. Chemical reduction rate (specify conditions) UK

g. Other (such as spontaneous degradation) ... Polyurea formation under hydrolytic conditions. ⁽⁴⁾

☐ Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	<< 1 day in water solution (4)
Atmosphere	26 hr (2)
Surface water	<< 1 day in water solution (4)
Soil	< 1 day (4)

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
Not found	Polyurea	> 1 yr	in water and soil (4)
95-80-7	2,4-Toluene diamine	< 1 day	} in biological waste-water treatment plant (4)
823-40-5	2,6-Toluene diamine	< 1 day	
5206-52-0	Urea, N, N- bis (3-isocyanato-4-methylphenyl)	Unknown half-life	in (5,6)

5.03 Specify the octanol-water partition coefficient, K_{ow} ... log 2.33 at 25°C
 Method of calculation or determination QSAR

5.04 Specify the soil-water partition coefficient, K_d reacts with water at 25°C
 Soil type

5.05 Specify the organic carbon-water partition coefficient, K_{oc} 2.60 = log at 25°C

5.06 Specify the Henry's Law Constant, H log₁₀ -5.88 atm-m³/mole

☐ Mark (X) this box if you attach a continuation sheet.

5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

<u>Bioconcentration Factor</u>	<u>Species</u>	<u>Test</u> ¹
None detected	Moina macrocopa Straus	Not defined (4)
None detected	Cyprinus carpio	Not defined (4)

¹Use the following codes to designate the type of test:

F = Flowthrough
S = Static

- (1) Phillips and Nachod, eds., Organic Electronic Spectral Data, Vol. IV, pg. 200.
- (2) K. H. Becker, V. Bastian and Th. Klein, The reactions of toluenediisocyanate, toluenediamine and methylenedianiline under simulated atmospheric conditions, J. Photochem. and Photobiol., A: Chemistry, 45 (1988) 195-205.
- (3) N. Caspers, B. Hamburger, R. Kanne and Waklebert, Ecotoxicity of TDI, MDI, TDA and MDA, Report to the International Isocyanate Institute, E-CE-41, 1986. Quoted in D. S. Gilbert, Fate of TDI and MDI in Air, Soil and Water, Polyurethanes World Congress 1987, Proceedings of the SPI/FSK.
- (4) F. K. Brochhagen and B. M. Grieveson, Environmental aspects of isocyanates in water and soil, Cellular Polymers, 3 (1984) 11-17.
- (5) K. Marcali, Microdetermination of toluenediisocyanate in atmosphere, Anal. Chem. 29 (1957) 552-558.
- (6) G. A. Campbell, T. J. Dearlove and W. C. Meluch, Di (isocyanatotolyl) urea, U.S. Patent 3,906,019 (1975), Chem. Abs. 84:5655h.

☐ Mark (X) this box if you attach a continuation sheet.

☒ 6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales	_____	_____
Distribution -- Wholesalers	_____	_____
Distribution -- Retailers	_____	_____
Intra-company transfer	_____	_____
Repackagers	_____	_____
Mixture producers	_____	_____
Article producers	_____	_____
Other chemical manufacturers or processors	_____	_____
Exporters	_____	_____
Other (specify)	_____	_____
_____	_____	_____

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

☐

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
Unknown	_____
_____	_____
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

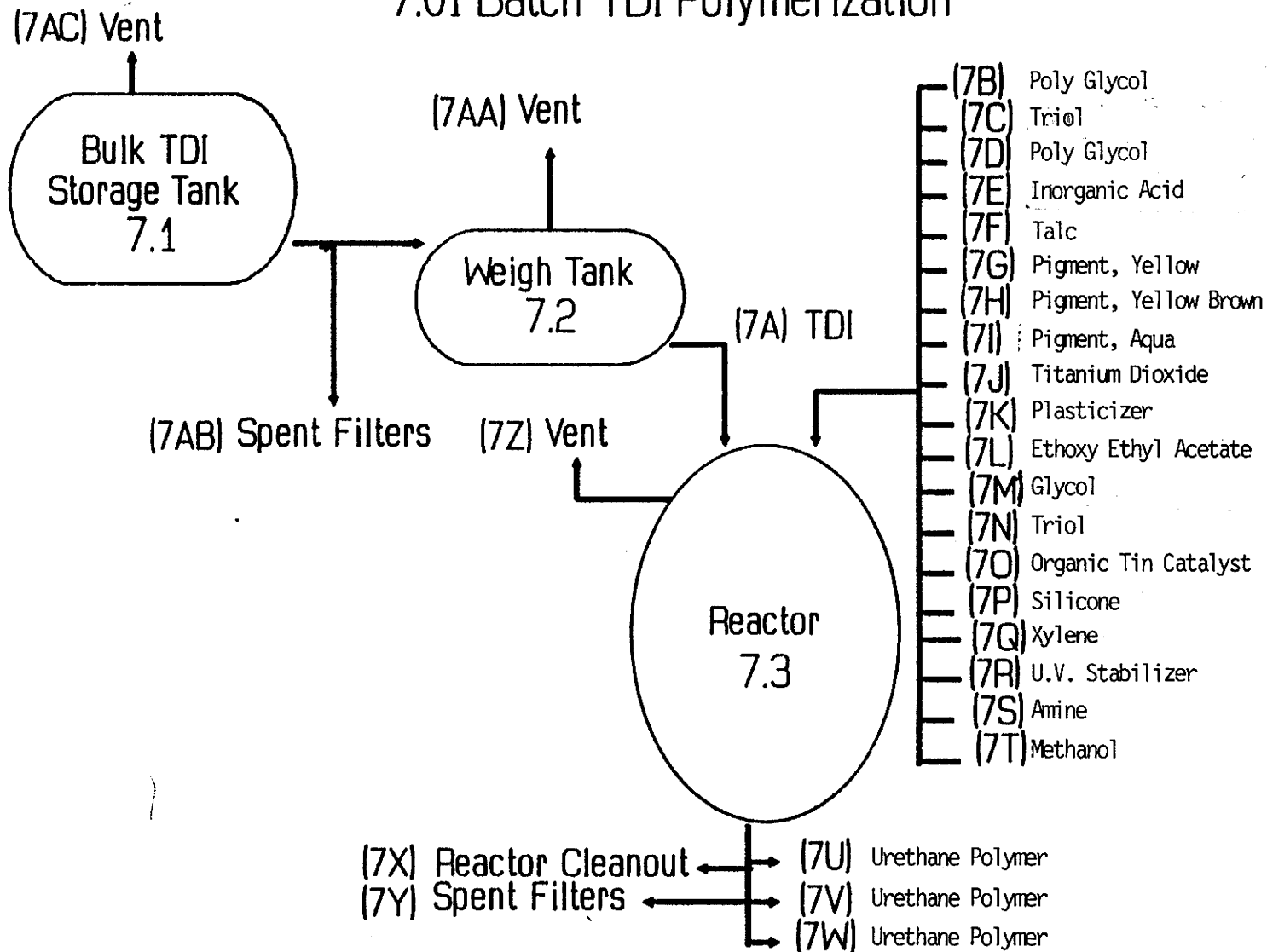
7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type Batch TDI Polymerization

☐ Mark (X) this box if you attach a continuation sheet.

7.01 Batch TDI Polymerization



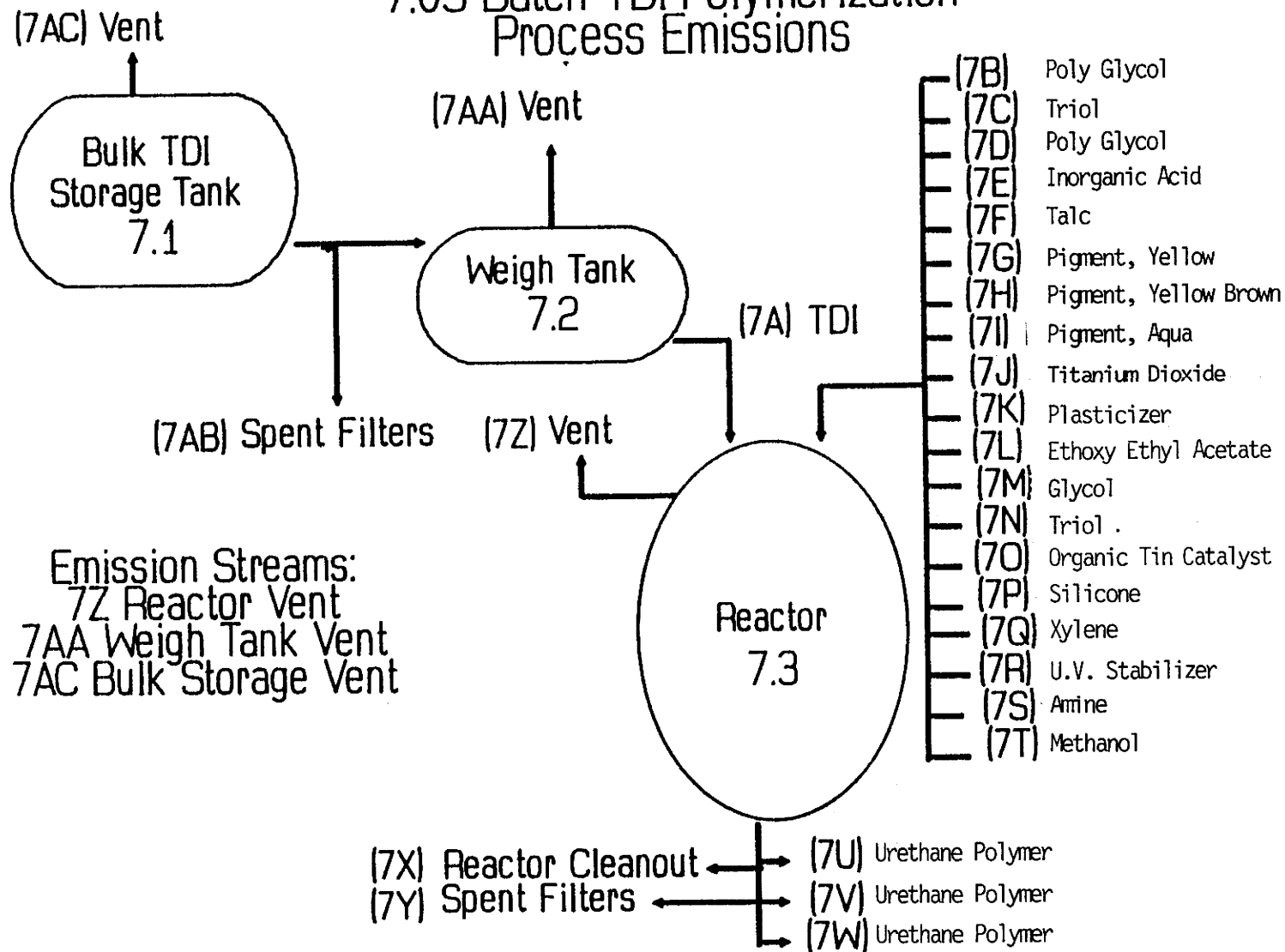
7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

☐ Process type Batch TDI Polymerization

☒ Mark (X) this box if you attach a continuation sheet.

7.03 Batch TDI Polymerization Process Emissions



7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.1</u>	<u>TDI Storage Tank</u>	<u>ambient</u>	<u>760-2500*</u>	<u>stainless steel</u>
<u>7.2</u>	<u>Weigh Tank</u>	<u>ambient</u>	<u>760-2000*</u>	<u>stainless steel</u>
<u>7.3</u>	<u>Reactor</u>	<u>30-120</u>	<u>0-2500*</u>	<u>stainless steel</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

* Nitrogen pressure

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Process Stream ID Code	Process Stream Description	Physical State ¹	Stream Flow (kg/yr)
<u>7A</u>	<u>TDI</u>	<u>OL</u>	<u>93,000</u>
<u>7B</u>	<u>Poly Glycol</u>	<u>OL</u>	<u>23,000</u>
<u>7C</u>	<u>Triol</u>	<u>OL</u>	<u>21,600</u>
<u>7D</u>	<u>Poly Glycol</u>	<u>OL</u>	<u>1,550</u>
<u>7E</u>	<u>Inorganic Acid</u>	<u>AL</u>	<u>1</u>
<u>7F</u>	<u>Talc</u>	<u>SO</u>	<u>356</u>
<u>7G</u>	<u>Pigment, yellow</u>	<u>SO</u>	<u>16</u>
<u>7H</u>	<u>Pigment, yellow/brown</u>	<u>SO</u>	<u>99</u>

¹Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure)
 SO = Solid
 SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Process Stream ID Code	Process Stream Description	Physical State ¹	Stream Flow (kg/yr)
<u>7I</u>	<u>Pigment</u>	<u>SO</u>	<u>26</u>
<u>7J</u>	<u>Titanium Dioxide</u>	<u>SO</u>	<u>191</u>
<u>7K</u>	<u>Plasticizer</u>	<u>OL</u>	<u>1,130</u>
<u>7L</u>	<u>Ethoxy Ethyl Acetate</u>	<u>OL</u>	<u>2,350</u>
<u>7M</u>	<u>Glycol</u>	<u>OL</u>	<u>68</u>
<u>7N</u>	<u>Triol</u>	<u>SO</u>	<u>69</u>
<u>7O</u>	<u>Organic Tin Catalyst</u>	<u>OL</u>	<u>1</u>
<u>7P</u>	<u>Silicone Fluid</u>	<u>OL</u>	<u>36</u>

¹Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)

GU = Gas (uncondensable at ambient temperature and pressure)

SO = Solid

SY = Sludge or slurry

AL = Aqueous liquid

OL = Organic liquid

IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Process Stream ID Code	Process Stream Description	Physical State ¹	Stream Flow (kg/yr)
7Q	Xylene	OL	80
7R	UV Stabilizer	SO	23
7S	Amine	SO	2
7T	Methanol	OL	11,400
7U	Urethane Polymer	OL	133,500
7V	Urethane Polymer	OL	4,480
7W	Urethane Polymer	OL	4,450
7X	Reactor Cleanout	OL	12,000

¹Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure)
 SO = Solid
 SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Process Stream ID Code	Process Stream Description	Physical State ¹	Stream Flow (kg/yr)
7Y	Spent Filters	SO	309
7Z	Vent. Reactor	GU	8
7AA	Vent. Weigh Tank	GU	8
7AB	Spent Filters	SO	309
7AC	Vent. Bulk Tank	GU	8

¹Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)

GU = Gas (uncondensable at ambient temperature and pressure)

SO = Solid

SY = Sludge or slurry

AL = Aqueous liquid

OL = Organic liquid

IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7A	TDI	99.9% (E)(W)	UK	N/A
7B	Poly Glycol	100% (E)(W)	UK	N/A
7C	Poly Glycol	100% (E)(W)	UK	N/A
7D	Poly Glycol	100% (E)(W)	UK	N/A
7E	Inorganic Acid	75% (E)(W)	Water	25
7F	Talc	100% (E)(W)	UK	N/A
7G	Pigment, Iron Oxide	100% (E)(W)	UK	N/A
7H	Pigment, Iron Oxide	100% (E)(W)	UK	N/A
7I	Pigment, Phthalocyanine	100% (E)(W)	UK	N/A
7J	Titanium Dioxide	100% (E)(W)	UK	N/A
7K	Plasticizer	100% (E)(W)	UK	N/A
7L	Ethoxy Ethyl Acetate	99.5% (E)(W)	Ethylene Glycol Monoethyl Ether	0.5

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7M	Glycol	99.9% (E)(W)	Water	0.1
7N	Triol	100% (E)(W)	UK	N/A
7O	Organic Tin Catalyst	90% (E)(W)	UK	N/A
	Tin Salts	10% (E)(W)	UK	N/A
7P	Silicone Fluid	100% (E)(W)	UK	N/A
7Q	Xylene	100% (E)(W)	UK	N/A
7R	U.V. Stabilizer	100% (E)(W)	UK	N/A
7S	Amine	100% (E)(W)	UK	N/A
7T	Methanol	100% (E)(W)	UK	N/A
7U	Urethane Polymer	55% (E)(W)	UK	N/A
	TDI	45% (E)(W)	UK	N/A

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).
If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a. Process Stream ID Code	b. Known Compounds ¹	c. Concen- trations ^{2,3} (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7V	Polyurethane	54% (E)(W)	UK	N/A
	2-ethoxy ethyl acetate	25% (E)(W)	UK	N/A
	Plasticizer	12% (E)(W)	UK	N/A
	Titanium Dioxide	4% (E)(W)	UK	N/A
	Iron Oxide	2% (E)(W)	UK	N/A
	Talc	2% (E)(W)	UK	N/A
7W	Polyurethane	54% (E)(W)	UK	N/A
	2-ethoxy ethyl acetate	27% (E)(W)	UK	N/A
	Plasticizer	12% (E)(W)	UK	N/A
	Talc	6% (E)(W)	UK	N/A
	Iron Oxide	< 1% (E)(W)	UK	N/A
	Plasticizer	< 0.6% (E)(W)	UK	N/A
	Pigment, Green	< 0.3% (E)(W)		

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a. Process Stream ID Code	b. Known Compounds ¹	c. Concen- trations ^{2,3} (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7Y (Liquid)	Urethane Polymer	51.7% (E)(W)	UK	N/A
	TDI	42.3% (E)(W)	UK	N/A
	Polyurethane	3.2% (E)(W)	UK	N/A
	Plasticizer	0.72% (E)(W)	UK	N/A
	2-ethoxy ethyl acetate	1.6% (E)(W)	UK	N/A
	Titanium Dioxide	0.12% (E)(W)	UK	N/A
	Iron Oxide	< 0.06% (E)(W)	UK	N/A
	Talc	0.24% (E)(W)	UK	N/A
	Plasticizer	< 0.018% (E)(W)	UK	N/A
	Pigment, Green	< 0.009% (E)(W)	UK	N/A

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s).
If a process block flow diagram is provided for more than one process type, photocopy
this question and complete it separately for each process type. (Refer to the
CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concen- trations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7X	Methanol	95% (E)(W)	UK	N/A
	Non reactive urea from methanol/prepolymer rxn	3.4% (E)(W)	UK	N/A
	Urethane Polymer	0.16% (E)(W)	UK	N/A
	2- ethoxy ethyl acetate	0.08% (E)(W)	UK	N/A
	Plasticizer	0.036% (E)(W)	UK	N/A
	Titanium Dioxide	0.006% (E)(W)	UK	N/A
	Iron Oxide	0.00% (E)(W)	UK	N/A
	Talc	0.003% (E)(W)	UK	N/A
	Plasticizer	< 9 ppm	UK	N/A
	Pigment, Green	< 5 ppm	UK	N/A

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentrations (% or ppm)
7AB	TDI in Spent Filters	99% (E)(W)	UK	N/A
7Z	Nitrogen	99.99% (E)(W)	TDI	0.01%
7AC	Nitrogen	99.99% (E)(W)	TDI	0.01%
7AA	Nitrogen	99.99% (E)(W)	TDI	0.01%
7Y	TDI in Spent Filters	45% (E)(W)	Isocyanate terminated polyurethane	55%

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

¹For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	NA	NA
2		
3		
4		
5		

²Use the following codes to designate how the concentration was determined:

A = Analytical result
E = Engineering judgement/calculation

³Use the following codes to designate how the concentration was measured:

V = Volume
W = Weight

☐ Mark (X) this box if you attach a continuation sheet.

PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

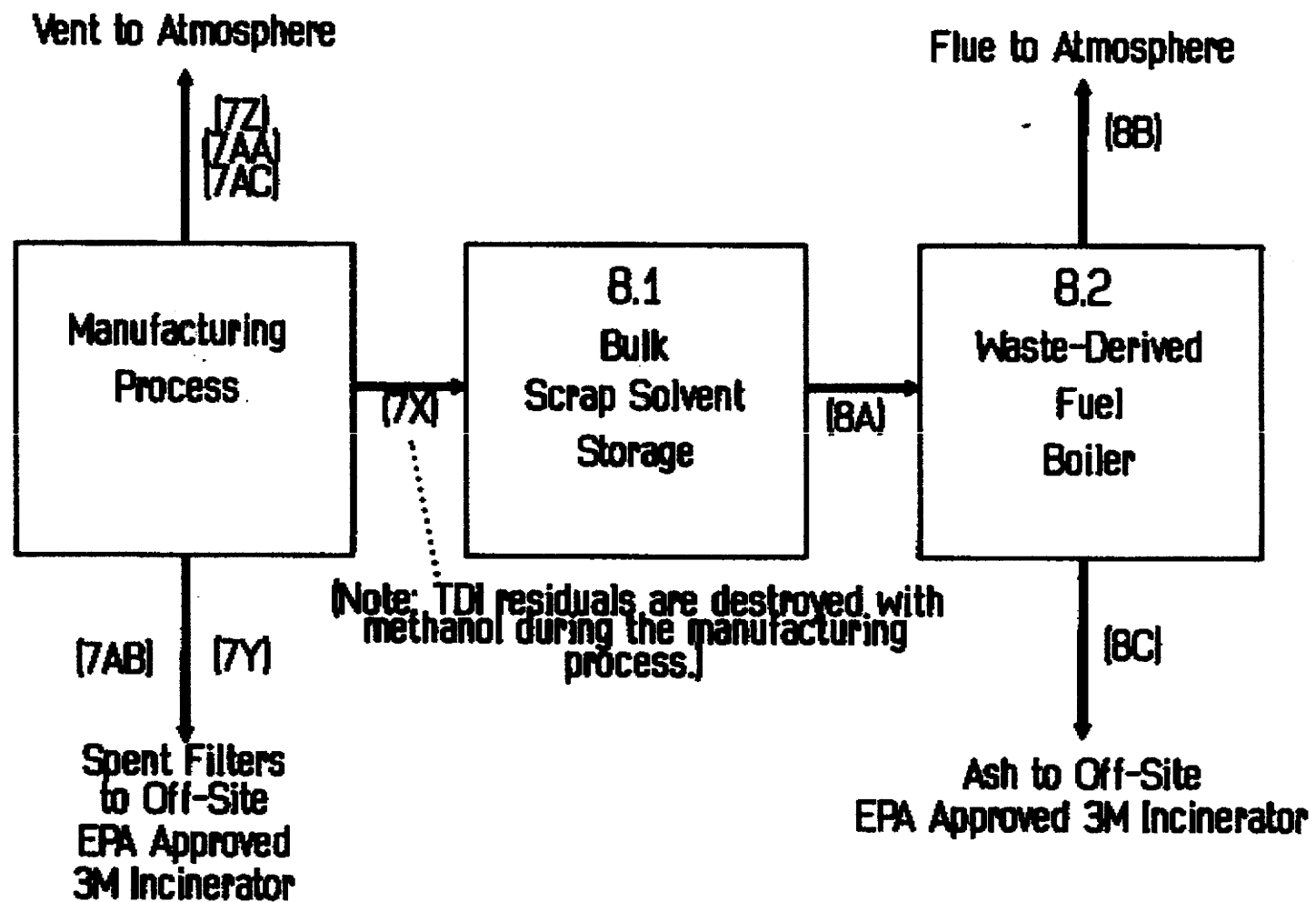
8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

☐ Process type Batch TDI Polymerization

☐ Mark (X) this box if you attach a continuation sheet.

8.01 Batch TDI Polymerization



PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste ¹	Physical State of Residual ²	Known Compounds ³	Concentrations (% or ppm) ^{4,5,6}	Other Expected Compounds	Estimated Concentrations (% or ppm)
7Y		OL	TDI	45 (filter drippings) (E)(W)	UK	N/A
		OL	Urethane Polymer	55 (filter drippings) (E)(W)	UK	N/A
		SO	Filter Cartridges	UK	UK	N/A
7X	I	OL	Methanol	95% (E)(W)	UK	N/A
		SO	Urea derivative	UK	UK	N/A
8A		OL	Cleaning Solvent	UK	UK	N/A
8B		GU	Flue gas	UK	UK	N/A

8.05 continued below

☒ Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste ¹	Physical State of Residual ²	Known Compounds ³	Concentrations (% or ppm) ^{4,5,6}	Other Expected Compounds	Estimated Concentrations (% or ppm)
7AA		GU	TDI	0.01% (E)(W)	UK	N/A
		GU	Nitrogen	99.99% (E)(W)	UK	N/A
7AC		GU	TDI	0.01% (E)(W)	UK	N/A
		GU	Nitrogen	99.99% (E)(W)	UK	N/A
7Z		GU	TDI	0.01% (E)(W)	UK	N/A
		GU	Nitrogen	99.99% (E)(W)	UK	N/A
7AB		OL	TDI	100% (filter drippings) (E)(W)	UK	N/A
		SO	Filter Cartridge	UK	UK	N/A

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

¹Use the following codes to designate the type of hazardous waste:

I = Ignitable
C = Corrosive
R = Reactive
E = EP toxic
T = Toxic
H = Acutely hazardous

²Use the following codes to designate the physical state of the residual:

GC = Gas (condensable at ambient temperature and pressure)
GU = Gas (uncondensable at ambient temperature and pressure)
SO = Solid
SY = Sludge or slurry
AL = Aqueous liquid
OL = Organic liquid
IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

³For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
<u>1</u>	<u>Not Applicable</u>	<u>Not Applicable</u>
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		

⁴Use the following codes to designate how the concentration was determined:

A = Analytical result

E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

⁵Use the following codes to designate how the concentration was measured:

V = Volume

W = Weight

⁶Specify the analytical test methods used and their detection limits in the table below. Assign a code to each test method used and list those codes in column e.

N/A

<u>Code</u>	<u>Method</u>	<u>Detection Limit</u> <u>(± ug/l)</u>
<u>1</u>		
<u>2</u>		
<u>3</u>		
<u>4</u>		
<u>5</u>		
<u>6</u>		

☐ Mark (X) this box if you attach a continuation sheet.

- 8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code ¹	Management Method Code ²	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes in Management Methods
				On-Site	Off-Site		
7AA	B57	M5 a	8	100	N/A	N/A	None
7AC	B57	M5 a	8	100	N/A	N/A	None
7Z	B57	M5 a	8	100	N/A	N/A	None
7AB	A08	3I	309		100	1.20	None

¹Use the codes provided in Exhibit 8-1 to designate the waste descriptions

²Use the codes provided in Exhibit 8-2 to designate the management methods

☒ Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Batch TDI Polymerization

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code ¹	Management Method Code ²	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes in Management Methods
				On-Site	Off-Site		
7Y	A08	3I	309		100	1.20	None
7X	A01	10RF	12,000	100		N/A	None
8A	A01	10RF	2,580,000	100		N/A	None
8B	B57	M5a	UK	100		N/A	None
8C	A10	3I	931		100	1.20	None

¹Use the codes provided in Exhibit 8-1 to designate the waste descriptions

²Use the codes provided in Exhibit 8-2 to designate the management methods

☐ Mark (X) this box if you attach a continuation sheet.

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1
No 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Air Pollution Control Device ¹	Types of Emissions Data Available
1	Not Applicable	N/A
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes 1
No 2

¹Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)
E = Electrostatic precipitator
O = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records on the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI
☐

<u>Data Element</u>	<u>Data are Maintained for:</u>		<u>Year in Which</u>	<u>Number of</u>
	<u>Hourly</u>	<u>Salaried</u>	<u>Data Collection</u>	<u>Years Records</u>
	<u>Workers</u>	<u>Workers</u>	<u>Began</u>	<u>Are Maintained</u>
Date of hire	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Age at hire	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Work history of individual before employment at your facility	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Sex	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Race	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Job titles	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Start date for each job title	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
End date for each job title	<u>X</u>	<u>X</u>	<u>1975</u>	<u>indefinitely</u>
Work area industrial hygiene monitoring data *	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Personal employee monitoring data	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Employee medical history	<u>X</u>	<u>X</u>	<u>about 1960</u>	<u>indefinitely</u>
Employee smoking history	<u>NA</u>	<u>NA</u>	<u>NA</u>	<u>NA</u>
Accident history	<u>X</u>	<u>X</u>	<u>about 1960</u>	<u>Indefinitely</u>
Retirement date	<u>X</u>	<u>X</u>	<u>1932</u>	<u>indefinitely</u>
Termination date	<u>X</u>	<u>X</u>	<u>1932</u>	<u>indefinitely</u>
Vital status of retirees	<u>X</u>	<u>X</u>	<u>1932</u>	<u>indefinitely</u>
Cause of death data	<u>X</u>	<u>X</u>	<u>about 1960</u>	<u>indefinitely</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

<input type="checkbox"/>		a.	b.	c.	d.	e.
		<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
		Manufacture of the listed substance	Enclosed	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Controlled Release	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Open	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
		On-site use as reactant	Enclosed	<u>93,000</u>	<u>20</u>	<u>825</u>
			Controlled Release	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Open	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
		On-site use as nonreactant	Enclosed	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Controlled Release	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Open	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
		On-site preparation of products	Enclosed	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Controlled Release	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
			Open	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A	<u>Bulk Materials Handler</u>
B	<u>Chemical Reactor Operator</u>
C	<u>Shift Crew Supervisor</u>
D	<u>OC Lab Technician</u>
E	<u></u>
F	<u></u>
G	<u></u>
H	<u></u>
I	<u></u>
J	<u></u>

☐ Mark (X) this box if you attach a continuation sheet.

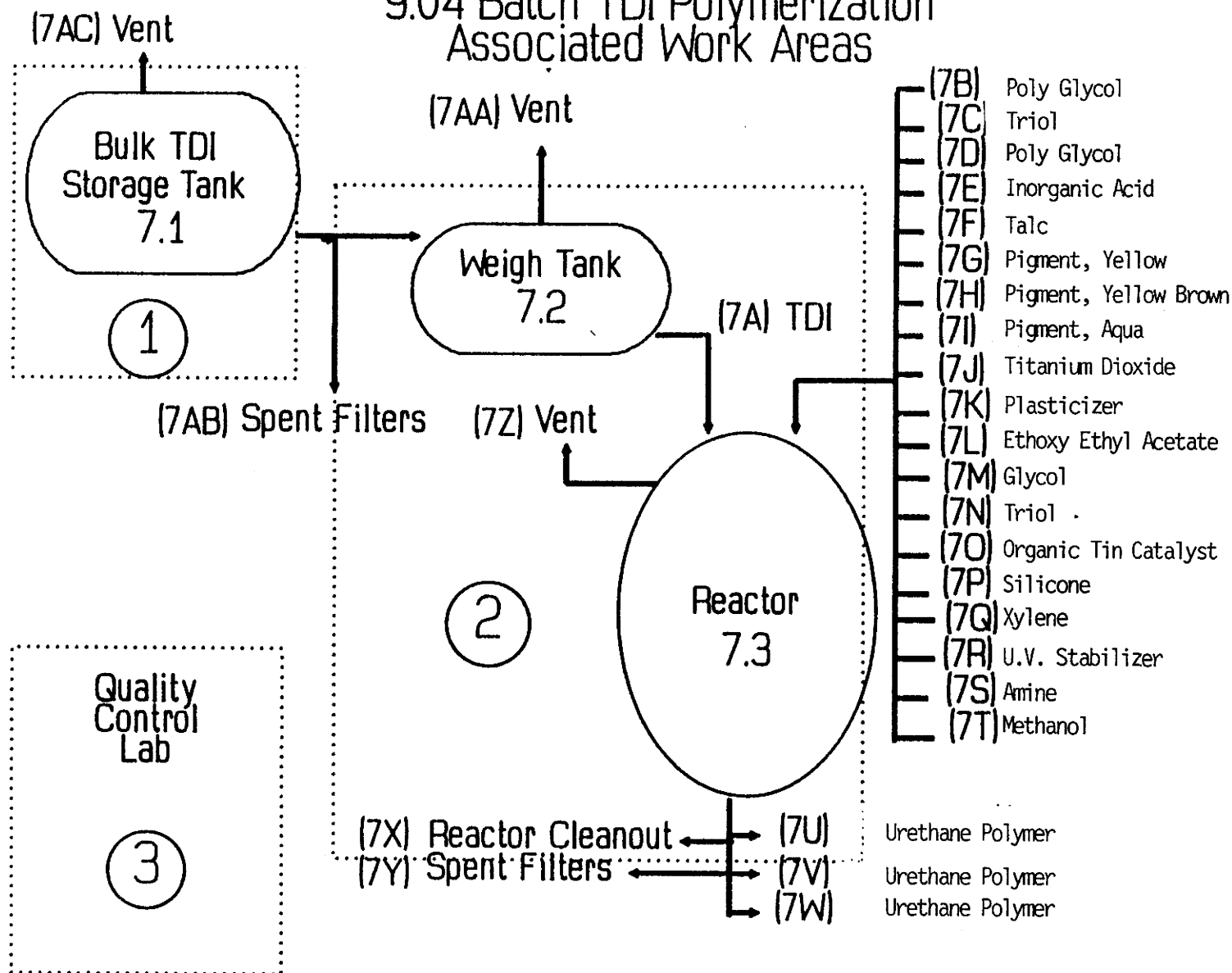
9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type Batch TDI Polymerization

☒ Mark (X) this box if you attach a continuation sheet.

9.04 Batch TDI Polymerization Associated Work Areas



9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Work Area ID

Description of Work Areas and Worker Activities

1 TDI Bulk Storage (Transfer TDI from tank truck to bulk storage tank).

2 Reactor area (Charge raw materials, monitor reaction conditions, sample, drain and package product, pre-run and post-run clean-ups).

3 Quality Control Lab (Test samples for compliance to specifications).

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 1 (TDI Bulk Storage Tank)

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
A	1	Direct Skin Contact	OL	C	6
A	2	Inhalation	GU	C	6
B	4	Direct Skin Contact	OL	B	8
B	4	Inhalation	GU	B	8
C	4	Inhalation	GU	A	8

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☒ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
B	4	Direct Skin Contact	OL	C	27
B	4	Inhalation	GU	C	27
C	2	Inhalation	GU	B	27

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☒ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 3 (QC Lab)

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
D	4	Direct Skin Contact	OL	C	27
D	4	Inhalation	GU	C	27

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

CBI

Work area 1 (Bulk TDI Storage Tank)

[illegible]

94

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

Labor Category	8-hour TWA Exposure Level (ppm, mg/m ³ , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m ³ , other-specify)
B	0.0002 ppm (1983)	Not Available
C	Not Applicable	Not Applicable

☐ Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

☐

<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples¹</u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone	1,2	*	1	A	Y	40 **
General work area (air)	1,2	*	1	A	Y	40 **
Wipe samples	N/A	N/A	N/A	N/A	N/A	N/A
Adhesive patches	N/A	N/A	N/A	N/A	N/A	N/A
Blood samples	N/A	N/A	N/A	N/A	N/A	N/A
Urine samples	N/A	N/A	N/A	N/A	N/A	N/A
Respiratory samples	N/A	N/A	N/A	N/A	N/A	N/A
Allergy tests	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)						
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)						
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)						

¹Use the following codes to designate who takes the monitoring samples:

- A = Plant industrial hygienist
- B = Insurance carrier
- C = OSHA consultant
- D = Other (specify) _____

* As determined by judgement of Industrial Hygiene Department

** Have not accumulated this number of years of history yet.

☐ Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

Sample Type	Sampling and Analytical Methodology
Personal Breathing Zone	Impinger with 0.4N HCl and 0.4N acetic acid solution. Analyzed by
	Colorimetric (Marcali).
General Area	Impingers with 0.4N HCl and 0.4N acetic acid solution. Analyzed by
	Colometric (Marcali).

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

Equipment Type ¹	Detection Limit ²	Manufacturer	Averaging Time (hr)	Model Number
E	0.0002 A	Gilian	1/2 hr.	H75113A
E	0.0002 A	MSA	1/2 hr.	S

¹Use the following codes to designate personal air monitoring equipment types:

- A = Passive dosimeter
- B = Detector tube
- C = Charcoal filtration tube with pump
- D = Other (specify) _____

Use the following codes to designate ambient air monitoring equipment types:

- E = Stationary monitors located within work area
- F = Stationary monitors located within facility
- G = Stationary monitors located at plant boundary
- H = Mobile monitoring equipment (specify) _____
- I = Other (specify) _____

²Use the following codes to designate detection limit units:

- A = ppm
- B = Fibers/cubic centimeter (f/cc)
- C = Micrograms/cubic meter (μ/m^3)

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

<input type="checkbox"/>	<u>Test Description</u>	<u>Frequency</u> <u>(weekly, monthly, yearly, etc.)</u>
	Not Applicable	

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 1 (Bulk TDI Storage Tank)

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
General dilution	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
Other (specify) <u>N/A</u>	<u></u>	<u></u>	<u></u>	<u></u>
Vessel emission controls	<u>Y</u>	<u>1969</u>	<u>N</u>	<u>N/A</u>
Mechanical loading or packaging equipment	<u>Y</u>	<u>1969</u>	<u>N</u>	<u>N/A</u>
Other (specify) <u>N/A</u>	<u></u>	<u></u>	<u></u>	<u></u>

☒ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
General dilution	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
Other (specify) <u>N/A</u>				
Vessel emission controls	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
Mechanical loading or packaging equipment	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Other (specify) <u>N/A</u>				

☒ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 3 (QC Lab)

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
General dilution	<u>Y</u>	<u>1961</u>	<u>N</u>	<u>N/A</u>
Other (specify) <u>N/A</u>	<u></u>	<u></u>	<u></u>	<u></u>
Vessel emission controls	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Mechanical loading or packaging equipment	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Other (specify) <u>N/A</u>	<u></u>	<u></u>	<u></u>	<u></u>

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 1 (Bulk TDI Storage Tank)

<u>Equipment or Process Modification</u>	<u>Reduction in Worker Exposure Per Year (%)</u>
<u>Not Applicable</u>	<u>Not Applicable</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

☒ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Not Applicable	Not Applicable

☒ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 3 (QC Lab)

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Not Applicable	Not Applicable

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Batch TDI Polymerization

Work area 1 (Bulk TDI Storage Tank)

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>Chemical Resistant Clothing</u>	Y

☒ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	Y
Face shields	Y
Coveralls	Y
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>Chemical Resistant Clothing</u>	Y

☒ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[] Process type Batch TDI Polymerization

Work area 3 (QC Lab)

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	N
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	
<u>Vented hood</u>	<u>Y</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

Work Area	Respirator Type	Average Usage ¹	Fit Tested (Y/N)	Type of Fit Test ²	Frequency of Fit Tests (per year)
1	Full Face Airline Respirator	C	Y	QL	1
2	Full Face Airline Respirator	C	Y	QL	1

¹Use the following codes to designate average usage:

A = Daily
 B = Weekly
 C = Monthly
 D = Once a year
 E = Other (specify) _____

²Use the following codes to designate the type of fit test:

QL = Qualitative
 QT = Quantitative

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Batch TDI Polymerization

Work area 1 (Bulk TDI Storage Tank)

Limited access, changing rooms and laundering services, respiratory protection, chemical resistant clothing, training programs, safety information and MSDS included in operating standards, safety meetings, periodic exposure monitoring.

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)	_____	_____	_____	_____
<u>Immediate response to spills or leaks</u>	_____	_____	_____	_____

Because of engineering controls, very few spills or leaks occur. If a spill does occur, it is cleaned up with absorbent material and a TDI decontamination solution containing water, ethanol and ammonium hydroxide. The decontamination solution reacts with TDI to form a non-reactive solid.

☒ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19** Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Batch TDI Polymerization

Work area 2 (Reactor Area)

Limited access, changing rooms and laundering services, respiratory protection, chemical resistant
clothing, training programs, safety information and MSDS included in operating standards, periodic
exposure monitoring, safety meetings.

- 9.20** Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)				
<u>Immediate response to spills or leaks</u>	_____	_____	_____	_____

Because of engineering controls, very few spills or leaks occur. If a spill does occur, it is cleaned up with absorbent material and a TDI decontamination solution containing water, ethanol and ammonium hydroxide. The decontamination solution reacts with TDI to form a non-reactive solid.

☒ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Batch TDI Polymerization

Work area 3 (QC Lab)

Limited quantities (pint or less), vented hoods, training programs, safety information and MSDS included in operating standard or raw material specifications, safety meetings.

9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type

Work area

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	_____	_____	_____	_____
Vacuuming	_____	_____	_____	_____
Water flushing of floors	_____	_____	_____	_____
Other (specify)				
Immediate response to leaks or spills	_____	_____	_____	_____

Because of care taken and limited quantity, very few spills or leaks occur. If a small spill occurs, it is cleaned up with absorbent material and a mixture of water, ethanol and ammonium hydroxide. The decontamination solution reacts with TDI to form a non-reactive solid.

☐ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes 1

No 2

Emergency exposure

Yes 1

No 2

If yes, where are copies of the plan maintained?

Routine exposure: _____

Emergency exposure: _____

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes (1)

No 2

A general Emergency Procedures Manual is located in the administration building. Specific clean-up response is included in each operating standard located on the production floor and in the QC lab.
If yes, where are copies of the plan maintained? _____

Has this plan been coordinated with state or local government response organizations?
Circle the appropriate response.

Yes (1)

No 2

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist 1

Insurance carrier 2

OSHA consultant 3

Other (specify) _____ 4

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 10 ENVIRONMENTAL RELEASE

General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

PART A GENERAL INFORMATION

10.01 Where is your facility located? Circle all appropriate responses.

CBI

- ☐ Industrial area ①
- Urban area 2
- Residential area 3
- Agricultural area 4
- Rural area 5
- Adjacent to a park or a recreational area 6
- Within 1 mile of a navigable waterway ⑦
- Within 1 mile of a school, university, hospital, or nursing home facility 8
- Within 1 mile of a non-navigable waterway 9
- Other (specify) _____ 10

☐ Mark (X) this box if you attach a continuation sheet.

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude 034 ° 38 ' 30 "

Longitude 087 ° 02 ' 30 "

UTM coordinates Zone _____, Northing _____, Easting _____

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation inches/year

Predominant wind direction

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of CBI Y, N, and NA.)

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	NA	NA	NA
Importing	NA	NA	NA
Processing	N	N	N
Otherwise used	NA	NA	NA
Product or residual storage	Y	N	N
Disposal	N	N	N
Transport	N	N	N

☐ Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

<input type="checkbox"/>	* Quantity discharged to the air	36	kg/yr ± 10 %
	Quantity discharged in wastewaters	0	kg/yr ± ____ %
	Quantity managed as other waste in on-site treatment, storage, or disposal units	0	kg/yr ± ____ %
**	Quantity managed as other waste in off-site treatment, storage, or disposal units	618	kg/yr ± 10 %

* From SARA Title III Section 313 Reporting for point source emissions at the TDI Bulk Storage Tank, TDI Weigh Tank, and the reactor and for fugitive emissions when changing filters, etc.

** Filters and filter drippings shipped to EPA approved 3M incinerator in Minnesota.

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7X	Reactor residual TDI destroyed with methanol.	
	The methanol is burned in a waste derived fuel	99.999%
	boiler.	
7Y	Spent filters and filter residue are incinerated	99.999%
	in an off-site EPA approved 3M incinerator in MN.	
7AA	Vented only when transfers (into) mode.	
7AC	Vented only when transfers (into) mode.	
7Z	Vented only when transfers (into) mode.	

☐ Mark (X) this box if you attach a continuation sheet.

PART B RELEASE TO AIR

10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type Batch TDI Polymerization

Point Source
ID Code

Description of Emission Point Source

7Z

Reactor Vent

☐ Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics - - Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Physical State ¹	Average Emissions (kg/day)	Frequency ² (days/yr)	Duration ³ (min/day)	Average Emission Factor ⁴	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
7Z	V	0.4	20	60	0.00005	0.0007	20	60

¹Use the following codes to designate physical state at the point of release:

G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) _____

²Frequency of emission at any level of emission

³Duration of emission at any level of emission

⁴Average Emission Factor — Provide estimated (\pm 25 percent) emission factor (kg of emission per kg of production of listed substance)

CBI

[]

¹Height of attached or adjacent building²Width of attached or adjacent building

³Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

☐

Point source ID code

Size Range (microns)

Mass Fraction (% ± % precision)

< 1

Not Applicable

≥ 1 to < 10

≥ 10 to < 30

≥ 30 to < 50

≥ 50 to < 100

≥ 100 to < 500

≥ 500

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

- 10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Batch TDI Polymerization
 Percentage of time per year that the listed substance is exposed to this process type 8 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals ¹						
Packed	N/A	N/A	N/A	N/A	N/A	N/A
Mechanical	N/A	N/A	N/A	N/A	N/A	N/A
Double mechanical ²	N/A	N/A	N/A	N/A	N/A	N/A
Compressor seals ¹	N/A	N/A	N/A	N/A	N/A	N/A
Flanges	N/A	N/A	N/A	13	N/A	14
Valves						
Gas ³	N/A	N/A	N/A	4	N/A	4
Liquid	N/A	N/A	N/A	6	N/A	8
Pressure relief devices ⁴ (Gas or vapor only)	N/A	N/A	N/A	1	N/A	3
Sample connections				Rupture Disc		Rupture Disc
Gas	N/A	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A	N/A
Open-ended lines ⁵ (e.g., purge, vent)						
Gas	N/A	N/A	N/A	3	N/A	1
Liquid	N/A	N/A	N/A	N/A	N/A	N/A

¹List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐ Mark (X) this box if you attach a continuation sheet.

10.13 (continued)

²If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

³Conditions existing in the valve during normal operation

⁴Report all pressure relief devices in service, including those equipped with control devices

⁵Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

CBI

☐

a. Number of Pressure Relief Devices	b. Percent Chemical in Vessel ¹	c. Control Device	d. Estimated Control Efficiency ²
3	> 99	Rupture Disc	100%
1	26-75	Rupture Disc	100%

¹Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

²The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

☐ Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Not Applicable

Equipment Type	Leak Detection Concentration (ppm or mg/m ³) Measured at Inches from Source	Detection Device ¹	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
Pump seals					
Packed					
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

¹Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

Vessel Type ¹	Floating Roof Seals ²	Composition of Stored Materials ³	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Vessel Volume (l)	Operat- ing	Design Flow Rate ⁵	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate ⁶
									Vessel Emission Controls ⁴				
/1/	P	99 + %	3.1	50	85	3.1	4.6	34000	Sealed Tank /4/	50gpm	5.1	99 + %	C

¹Use the following codes to designate vessel type:

F = Fixed roof
 CIF = Contact internal floating roof
 NCIF = Noncontact internal floating roof
 EFR = External floating roof
 P = Pressure vessel (indicate pressure rating)
 H = Horizontal
 U = Underground

²Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary
 MS2 = Shoe-mounted secondary
 MS2R = Rim-mounted, secondary
 LM1 = Liquid-mounted resilient filled seal, primary
 LM2 = Rim-mounted shield
 LMW = Weather shield
 VM1 = Vapor mounted resilient filled seal, primary
 VM2 = Rim-mounted secondary
 VMW = Weather shield

³Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

⁴Other than floating roofs

⁵Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

⁶Use the following codes to designate basis for estimate of control efficiency:

C = Calculations
 S = Sampling

/1/ 50 PSIG

/4/ Sealed tank. Vented only when filling. Product is stored in drums.

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
<u>1</u>	Not Applicable			
<u>2</u>				
<u>3</u>				
<u>4</u>				
<u>5</u>				
<u>6</u>				

10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
<u>1</u>	Not Applicable				
<u>2</u>					
<u>3</u>					
<u>4</u>					
<u>5</u>					
<u>6</u>					

☐ Mark (X) this box if you attach a continuation sheet.

General Offices/3M

3M Center
St. Paul, Minnesota 55101-1000

DOCUMENT PROCESSING CENTER
OFFICE OF TOXIC SUBSTANCES, TS-790
U.S. EPA
401 M ST. S.W.
WASHINGTON, D.C. 20460

Attn. CAIR Reporting Office

